CONTENTS

Volume 3, Issue Nos. 1–4
International Journal for
NUMERICAL METHODS IN ENGINEERING

Issue No. 1, JANUARY–MARCH

Editorial 3

T. J. Poskitt: The Numerical Solution of Non-Linear Consolidation Problems . . . 5

A. Jennings and D. R. L. Orr: Application of the Simultaneous Iteration Method to Undamped Vibration Problems 13

G. C. Wright and G. A. Miles: An Economical Method for Determining the Smallest Eigenvalues of Large Linear Systems 25

D. Gelder: Solution of the Compressible Flow Equations 35

A. Scholes and E. M. Strover: The Piecewise-Linear Analysis of Two Connecting Structures including the Effect of Clearance at the Connections 45

C. F. Kettleborough: Non-Axial-Symmetric Thermal Stresses in Circular Discs or Cylinders 53

R. S. Barsoum: Finite Element Method Applied to the Problem of Stability of a Non-Conservative System 63

A. W. Leissa, W. E. Clausen and G. K. Agrawal: Stress and Deformation Analysis of Fibrous Composite Materials by Point Matching 89

J. Robinson and M. Petyt: Dynamic Analysis of Structures using the Rank Force Method 103

F. Sawko and P. A. Merriman: An Annular Segment Finite Element for Plate Bending 119

G. I. N. Rozvany: Concave Programming and Piece-Wise Linear Programming . . . 131

W. L. Wood: Note on Dynamic Relaxation 145

Letter to the Editor 149

Book Review 151

Issue No. 2, APRIL–JUNE

Editorial Notice 154

J. G. A. Croll and A. C. Walker: The Finite Difference and Localized Ritz Methods . 155

J. T. Oden and B. E. Kelley: Finite Element Formulation of General Electrothermo-elasticity Problems 161

J. Counts and J. G. Bennett: Axial Wave Propagation in Membrane Shells of Revolution 181

N. Distéfano: Dynamic Programming and the Solution of the Biharmonic Equation . 199

A. J. Morris: Non-linear Programming for the Plastic Analysis of Local Deformations in Shell Structures 215

M. A. Dokainish and S. Rawtani: Vibration Analysis of Rotating Cantilever Plates . . 233

A. B. Templeman: A Steepest Gradient Method for Optimum Structural Design . . . 249

S. Chakrabarti: Trigonometric Function Representations for Rectangular Plate Bending Elements 261

O. C. Zienkiewicz, R. L. Taylor and J. M. Too: Reduced Integration Technique in General Analysis of Plates and Shells 275

Short Communications 291

Comment 295

Issue No. 3, JULY–SEPTEMBER

S. Klein: A Static and Dynamic Finite Element Shell Analysis with Experimental Verification 299

J. T. Oden and H. J. Brauchli: On the Calculation of Consistent Stress Distributions in Finite Element Approximations 317

J. M. Boisserie: Generation of Two- and Three-dimensional Finite Elements 327

A. L. Yettram and M. J. S. Hirst: The Solution of Structural Equilibrium Equations by the Conjugate Gradient Method with Particular Reference to Plane Stress Analysis . . 349

W. W. Recker: A Numerical Solution of Axisymmetric Problems in Elastodynamics . 361

G. Cantin: An Equation Solver of Very Large Capacity 379

A. K. Rao, I. S. Raju and A. V. Krishna Murty: A Powerful Hybrid Method in Finite Element Analysis 389

M. Gray and R. A. Smith: Use of Optimization Methods to Solve Heat Convection Problems with Unknown Wall Boundary Conditions 405

R. P. Baronas and A. A. Chyras: Linear Programming Methods of Displacement Analysis in Elastic–Plastic Frames 415

S. J. Fenves and A. Gonzalez–Caro: Network-Topological Formulation of Analysis and Design of Rigid–Plastic Framed Structures 425

Short Communications 443

Issue No. 4, OCTOBER–DECEMBER

C. Hardy, C. N. Baronet and G. V. Tordion: The Elasto-Plastic Indentation of a Half-space by a Rigid Sphere 451

J. S. Brew and D. M. Brotton: Non-linear Structural Analysis by Dynamic Relaxation . 463

Y. Yamamoto and N. Tokuda: A Note on Convergence of Finite Element Solutions . 485

E. P. Popov and P. Sharifi: A Refined Curved Element for Thin Shells or Revolution . 495

T. J. Williams: Numerical Methods for Evaluation of Equilibrium Composition of Ideal Gases 509

O. C. Zienkiewicz and D. V. Phillips: An Automatic Mesh Generation Scheme for Plane and Curved Surfaces by 'Isoparametric' Co-ordinates 519

D. J. Dawe: A Finite-Deflection Analysis of Shallow Arches by the Discrete Element Method 529

J. Kratochvíl, A. Ženíšek and M. Zlámal: A Simple Algorithm for the Stiffness Matrix of Triangular Plate Bending Elements 553

C. D. Mote, Jr.: Global-Local Finite Element 565

S. F. Pawsey and R. W. Clough: Improved Numerical Integration of Thick Shell Finite Elements 575

Short Communications 587

Table of Contents, Volume 3 595

Author Index 599

INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING, VOL. 3, 599–600 (1971)

AUTHOR INDEX, VOLUME 3

Agrawal, G. K.: see Leissa, A. W., 89

Baronas, R. P., and Chyras, A. A.: Linear programming methods of displacement analysis in elastic–plastic frames, 415
Baronet, C. N.: see Hardy, C., 451
Barsoum, R. S.: Finite element method applied to the problem of stability of a non-conservative system, 63
Bennett, J. G.: see Counts, J., 181
Boisserie, J. M.: Generation of two- and three-dimensional finite elements, 327
Brauchli, H. J.: see Oden, J. T., 291
——: see Oden, J. T., 317
Brew, J. S., and Brotton, D. M.: Non-linear structural analysis by dynamic relaxation, 463
Brotton, D. M.: see Brew, J. S., 463

Cantin, G.: An equation solver of very large capacity, 379
Chakrabarti, S.: Trigonometric function representations for rectangular plate bending elements, 261
Chyras, A. A.: see Baronas, R. P., 415
Clausen, W. E.: see Leissa, A. W., 89
Clough, R. W.: see Pawsey, S. F., 575
Counts, J., and Bennett, J. G.: Axial wave propagation in membrane shells of revolution, 181
Croll, J. G. A., and Walker, A. C.: The finite difference and localized Ritz methods, 155

Dawe, D. J.: A finite deflection analysis of shallow arches by the discrete element method, 529
Distéfano, N.: Dynamic programming and the solution of the biharmonic equation, 199
Dokainish, M. A., and Rawtani, S.: Vibration analysis of rotating cantilever plates, 233

Fenves, S. J., and Gonzalez-Caro, A.: Network-topological formulation of analysis and design of rigid–plastic framed structures, 425

Gelder, D.: Solution of the compressible flow equations, 35
Gonzales-Caro, A.: see Fenves, S. J., 425
Gray, M., and Smith, R. A.: Use of optimization methods to solve heat convection problems with unknown wall boundary conditions, 405

Hardy, C., Baronet, C. N., and Tordion, G. V.: The elasto-plastic indentation of a half-space by rigid sphere, 451
Hellen, T. K.: Letter to the editor, 149
Hirst, M. J. S.: see Yettram, A. L., 349

Irons, B. M.: Quadrature rules for brick based finite elements, 293

Jennings, A., and Orr, D. R. L.: Application of the simultaneous iteration method to undamped vibration problems, 13

Kelley, B. E.: see Oden, J. T., 161
Kettleborough, C. F.: Non-axial-symmetric thermal stresses in circular discs or cylinders, 53
Klein, S.: A static and dynamic finite element shell analysis with experimental verification, 299
Kratochvíl, J., Ženíšek, A., and Zlámal, M.: A simple algorithm for the stiffness matrix of triangular plate bending elements, 553
Krishna Murty, A. V.: see Rao, A. K., 389

Leissa, A. W., Clausen, W. E., and Agrawal, G. K.: Stress and deformation analysis of fibrous composite materials by point matching, 89

Merriman, P. A.: see Sawko, F., 119
Miles, G. A.: see Wright, G. C., 25
Morris, A. J.: Non-linear programming for the plastic analysis of local deformations in shell structures, 215
Mote, C. D., Jr.: Global-local finite element, 565
Mullineux, N., and Reed, J. R.: Discussion, 295

Oden, J. T., and Kelley, B. E.: Finite element formulation of general electrothermoelasticity problems, 161
——, and Brauchli, H. J.: A note on accuracy and convergence of finite element approximations, 291
——, and Brauchli, H. J.: On the calculation of consistent stress distributions in finite element approximations, 317
Orr, D. R. L.: see Jennings, A., 13

Pawsey, S. F., and Clough, R. W.: Improved numerical integration of thick shell finite elements, 575
Petyt, M.: see Robinson, J., 103
Phillips, D. V.: see Zienkiewicz, O. C., 519
Popov, E. P.: A refined curved element for thin shells of revolution, 495
Poskitt, T. J.: The numerical solution of non-linear consolidation problems, 5

Raju, I. S.: see Rao, A. K., 389
Rao, A. K., Raju, I. S., and Krishna Murty, A. V.: A powerful hybrid method in finite element analysis, 389
Rawtani, S.: see Dokainish, M. A., 233
Recker, W. W.: A numerical solution of axi-symmetric problems in elastodynamics, 361
Reed, J. R.: see Mullineux, N., 295
Robinson, J., and Petyt, M.: Dynamic analysis of structures using the rank force method, 103
——: Discussion, 443
Rozvany, G. I. N.: Concave programming and piece-wise linear programming, 131

Sawko, F., and Merriman, P. A.: An annular segment finite element for plate bending, 119
Scholes, A., and Strover, E. M.: The piecewise-linear analysis of two connecting structures including the effect of clearance at the connections, 45
Sharifi, P.: see Popov, E. P., 495
Smith, R. A.: see Gray, M., 405
Strover, E. M.: see Scholes, A., 45

Taylor, R. L.: see Zienkiewicz, O. C., 275
Templeman, A. B.: A steepest gradient method for the optimum structural design, 249
Tokuda, N.: see Yamamoto, Y., 485
Too, J. M.: see Zienkiewicz, O. C., 275
Tordion, G. V.: see Hardy, C., 451

Walker, A. C.: see Croll, J. G. A., 155
Williams, T. J.: Numerical methods for evaluation of equilibrium composition of ideal gases, 509
Wood, W. L.: Note on dynamic relaxation, 145
Wright, G. C., and Miles, G. A.: An economical method for determining the smallest eigenvalues of large linear systems, 25

Yamamoto, Y., and Tokuda, N.: A note on convergence of finite element solutions, 485
Yettram, A. L., and Hirst, M. J. S.: The solution of structural equilibrium equations by the conjugate gradient method with particular reference to plane stress analysis, 349

Ženíšck, A.: see Kratochvíl, J., 553
Zienkiewicz, O. C., Taylor, R. L., and Too, J. M.: Reduced integration technique in general analysis of plates and shell, 275
——, and Phillips, D. V.: An automatic mesh generation scheme for plane and curved surfaces by 'isoparametric' co-ordinates, 519
Zlámal, M.: see Kratochvíl, J., 553